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ABSTRACT

Designed to alert adult basic education teachers to the factors of readability and to suggest ways that some readability problems can be alleviated, this resource unit discusses the problems posed by readability formulas and suggests that teachers must both press for more readable adult texts and question intelligently the products of publishers and adult educators. It then examines (1) the mechanical, content, and language factors affecting readability; (2) visual tools used to enhance readability; (3) stylistic and formal clues used to enhance reading comprehension; (4) personal experience used for clues; (5) readability of teacher-made materials; (6) specialized jargon for every-day reading; (7) organizational clues that enhance readability; (8) a readability formula in use; and (9) the Fry formula for adult readability. (HTH)

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READABILITY

DEFINING THE PROBLEMS

FINDING SOLUTIONS

A Connecticut ABE Staff Development Project

RESOURCE UNIT

CS006990

READABILITY

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FINDING SOLUTIONS

A Connecticut ABE Staff Development Project

RESOURCE UNIT

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Looking at the Unit

This unit is designed to alert adult educators to the factors of readability and to suggest ways that some readability problems can be ameliorated.

While many factors can be evaluated against a standard with some scientific merit, educators must accept the fact that some readability factors are a matter of taste and personal preference. There is no such thing as a valid, objective readability level.

Looking at the Problem

Among educators the term, "readability" is applied almost exclusively to that combination of multi-syllabic words and sentence-lengths that, by use of a formula, can be pinned to a specific grade level. But this process is not as useful as it sounds. The two adult readability formulas most commonly used (Frye and Gunning-Fog) can differ as much as four years on the same text. Even within the same article the level can range several years.

Graphics, typography and design, are considered legitimate readability factors by publishers of school texts. Publishers of adult materials show less concern for these areas - perhaps because adult educators voice little knowledgeable concern themselves.

Looking Ahead

If ABE classes are to attain some consistent measure of achievement, adult educators will need to press for more readable adult texts. That is possible only if the staffs of ABE programs are aware of the range of factors affecting readability and can, therefore, intelligently question the products of publishers and adult educators.

Factors of Readability

Mechanical

Line length

3 to 3 1/2 inches per line is the accepted limit for comfortable eye spans. Newspaper columns are slightly more than half that width.

An inordinate number of texts for adults run in the neighborhood of 6 inches.

Type size

Type for elementary school books range from 18 point for first grade readers to 10 or 11 point for good junior high readers.

18 Point

14 Point

10 Point

Few adult reading books use the 12-14 point size appropriate for beginning readers. Some even use sizes too small for the comfort of excellent readers.

Ligatures and serifs

In some type styles, fe, fi, fr, ff, or fy are set as one continuous character or as a ligature. Serifs are the strokes or lines at the bottom or tops of letters, for example in this type face, i, l, d, n, m, r. Type styles without serifs (sanserif) more closely resemble manuscript, for example, i, l, d, n, m r.

Beginning readers for children do not use ligatures or serified letters. Beginning texts for adults are not so careful to avoid these letter variations, even though decoding of strange letters can frustrate adult readers, too.

Leading

The space between lines of type is called leading. Copy set with too little or too much leading is difficult to read.

Sentence vs. line length

Copy set on short line lengths can cause sentences to run four or more lines before concluding and necessitate many end-of-line hyphenations.

Both broken words and multi-line sentences can compound the difficulty of decoding complex text.

Content and Language

Sentence structure

A disproportionate number of compound and complex sentences can make reading difficult. (Too many short simple sentences can do the same.)

Vocabulary

Unfamiliar vocabulary, specialized terms and/or idiomatic usage can quickly compound themselves into difficult reading, especially when several new terms are introduced in one paragraph. However, attempts to avoid use of a difficult word can result in awkward sentence structure or unnecessarily long phrases and thus be just as detrimental to readability as one new term.

Visual aids

When a text that is adjudged "difficult" according to a formula, is accompanied by diagrams, illustrations, maps or other instructive visual aids that help explain the main idea or point out a detail, the readability level is reduced.

While purposeful illustrations are used extensively for children, publishers of adult texts often omit illustrations or use pictures of poor quality. Apparently the assumption is that adults view pictures as childish. One skimming of the ever popular and far from childish National Geographic disproves that theory.

Using Visual Tools

Illustrations

Photographs, drawings, diagrams and cartoons are interest catchers, mood setters and extenders of the printed message. Adults need to recognize the legitimacy of such tools and learn to capitalize on, rather than be embarrased by reliance on, illustrations.

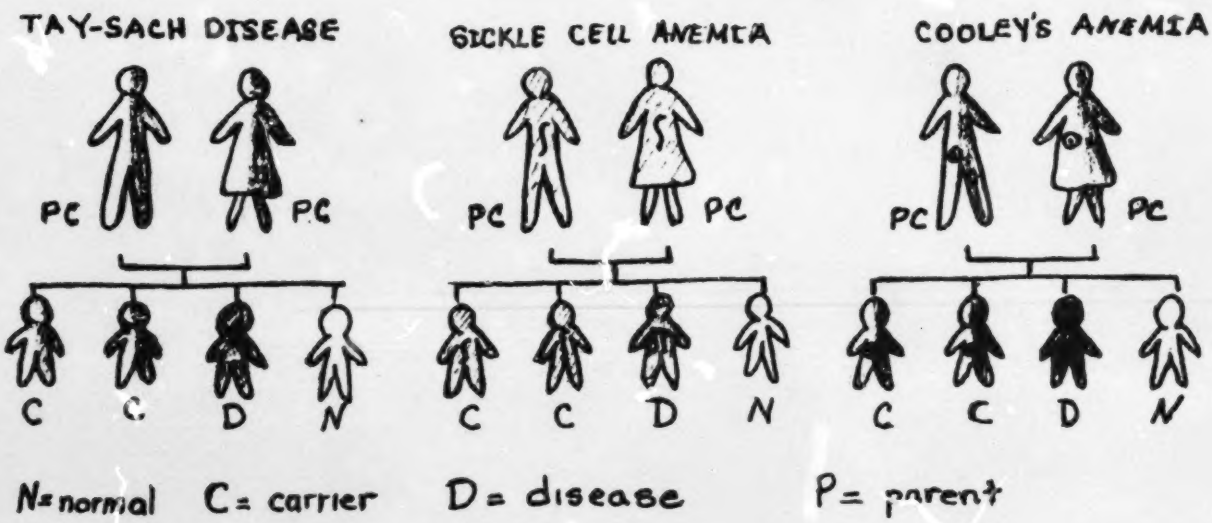
- Have students review illustrations as a method of determining the purpose of a text.* Based on this review, ask students: 1) to predict topics under discussion, setting, mood, point of view, type of actions in the text; 2) to assess own interest in or ability to read printed matter. (For example, a quick survey of a number of diagrams about stereo components and circuits will dissuade me from reading an article unless it's required. I don't understand the diagrams, so I suspect the text will be much too complex.)

*Purposes:
to inform
to instruct or educate
to entertain
to persuade
to express own opinion and ideas

- Use cartoon strips cut into separate frames to point out cartoonists' devices to represent sound, speech, thought, sequence, passage of time and/or time period. Have students classify and label examples.

- Use editorial cartoons to point out cartoonists' devises to represent various political or public figures, countries, groups, events, time periods, issues. (For example: hawks and doves; British Lion; Russian Bear; prominent facial features exaggerated for identification purpose.)

- Ask students to collect and classify examples of photographs and/or drawings that are used for propaganda (good and bad), (i.e. to "sell" a product for profit, an idea to gain power) e.g. political, economic, religious, an idea for altruistic or similar lofty reasons. Categories could be varied to include the type of appeal used, e.g., sex appeal, youthfulness, self-protection, self-reliance, patriotism, kindheartedness, economics, intelligence. (This project can serve as an introduction to similar projects emphasizing use of language for propaganda purposes.)



Graphics

Maps, graphs and tables are visual tools designed to improve comprehension, to convey data efficiently and effectively. Students should build the habit of using these tools both to better understand what a text says and review data being studied.

- Construct lesson cards that ask students to read these graphic tools for literal and inferential or evaluative messages. That is, be able to answer questions about who, what, where, how many, how much, when, but also why, what if, what might, when will, how important, what predictions (conclusions) can be drawn.

- Construct a bulletin board or loose-leaf reference file of newspaper/magazine clippings that show accurate and inaccurate, biased or incomplete graphics. Give special emphasis to the following:
  - date of data used (all three forms)
  - necessary distortion caused by map projections
  - necessary exclusion caused by limited space
  - deliberate or careless distortion caused by missing zero axis (bar, line graphs), irregular symbols (pictograph), inconsistent intervals for axis and/or bars (bar and line graphs), exclusion of data that is as significant and appropriate as the plotted data
  - inappropriate choice of graphics for presentation of data.

- Compile a list or card catalog of standard map symbols and abbreviations. Record the usual meaning of the symbols on the back of each card. Encourage students to drill on symbol recognition.

- Have students construct or complete tables, maps and graphs that present data given in a list accurately and effectively. For example:
  - organizing the daily list of high/low temperatures across the nation into a table according to logical, numerical, alphabetical order
  - plotting high/low temperatures for the city (state) in a bar graph
  - tracing on a city map the route of a parade described in a newspaper article
  - locating on a state map sites of state parks listed in a table of parks.

Typography

Headlines, subheads, captions, type faces and size, numerals and arrows, space and lack of it are all devices to aid a reader's comprehension and to keep him interested in what he is reading. These devices usually give clues to what the writer/editor feels is most important in his material. (Notable exception are fine print messages.) Encourage your students to use these visual clues when skimming for main ideas and specific topics, finding major points and new terms, identifying sources, date, author or photographer, locating examples of a writer's attempt to capture an audience.

- Have students compile a catalogue of various type sizes and/or style used for headlines, subheads, ads, classified ads, photo and other credit lines. Students might also include examples of typographic devices that convey special information, such as copyright mark, trademarks, logos, masthead. (See illustration.)

- Have student collect and evaluate the readability (comfort) level of paperback and hardback books set on various column width and leading or in various type sizes. Stress the very real problem of reading printed materials that is too small, too wide for normal eye span, too closely set to separate lines visually. Point out that this is a physical problem that can hamper comprehension. Encourage students to be as selective in choice of typographically appealing print as they are in reading speed or style.

12 point (Helv. M.)

questions will be answered for your as you read the chapter.

You know that you should carry your license with you at all times. Do you know the reasons why?

A license is not valid forever. You must renew your license to keep it valid. Do you know how often you must renew your license? Do you know exactly when your license is to be renewed? Read the chapter to find the answers to these questions and others about license renewal.

The posted speed limits change from time to time. Do you know what the present maximum speed limit is on access highways? Is the maximum posted speed limit the same for all highways? You will learn more facts about driving speeds as you read the chapter.

14 point (Helv. M.)

You're a probably wondering how many tests you will have to take to get a license. There are four tests. Can you name them? Do you know what you will have to do to pass each test? These questions and other questions will be answered for your as you read the chapter.

You know that you should carry your license with you at all times. Do you know the reasons why?

A license is not valid forever. You must renew your license to keep it valid. Do you know how often you must renew your license? Do you know exactly when your license is to be renewed? Read the chapter to find the answers to these questions and others about license renewal.

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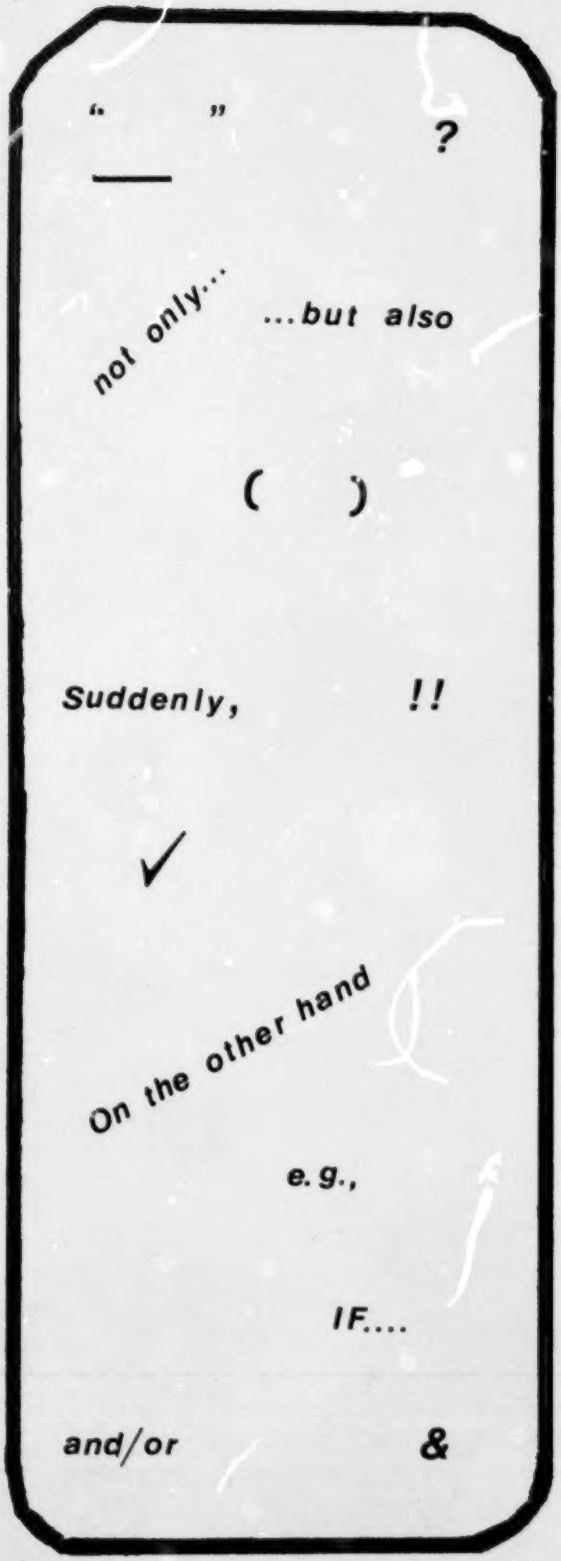


Often the obvious is overlooked. Readers are so intent upon the unfamiliar part of a text, they overlook familiar phrases that are, in fact, clues intended to guide the reader.

. Review the use of words and phrases that should alert a reader to a shift in idea or a comparison of ideas (e.g. not only...but also, nevertheless, on the other hand, except, suddenly, unexpectedly, likewise, similarly). Have students skim newspapers or magazine articles and underline word clues that warn of a change of thought or a comparison of ideas.

. Review punctuation marks and typographical devices that indicate extraneous or relatively unimportant data (e.g. nonrestrictive modifiers, parenthetical phrases, non-restrictive appositives, abrupt changes in continuity as set off by dashes). Have students skim newspapers or magazine articles and cross out extraneous details that are indicated by such clues.

. Have students read conclusions, summaries, points to remember or review questions, introductory materials that help establish a mind set for an article's (chapter's, book's) theme and/or viewpoint.

. Have students write subheads for various sections of a long article in which only one or two subheads are used. Students will need to skim for main ideas to choose an appropriate subhead. In addition to giving practice in organizational skills, writing subheads also can serve as a preview or review technique.

. Compile a list of familiar writers, TV and movie producers (or writers), musicians (vocalists, instrumentalists, songwriters), comedians who are noted for a particular style, topic, or setting. Then ask students to speculate on the topic (style, setting) of a new or imaginary work by each of the most familiar creators. (For example, what setting will

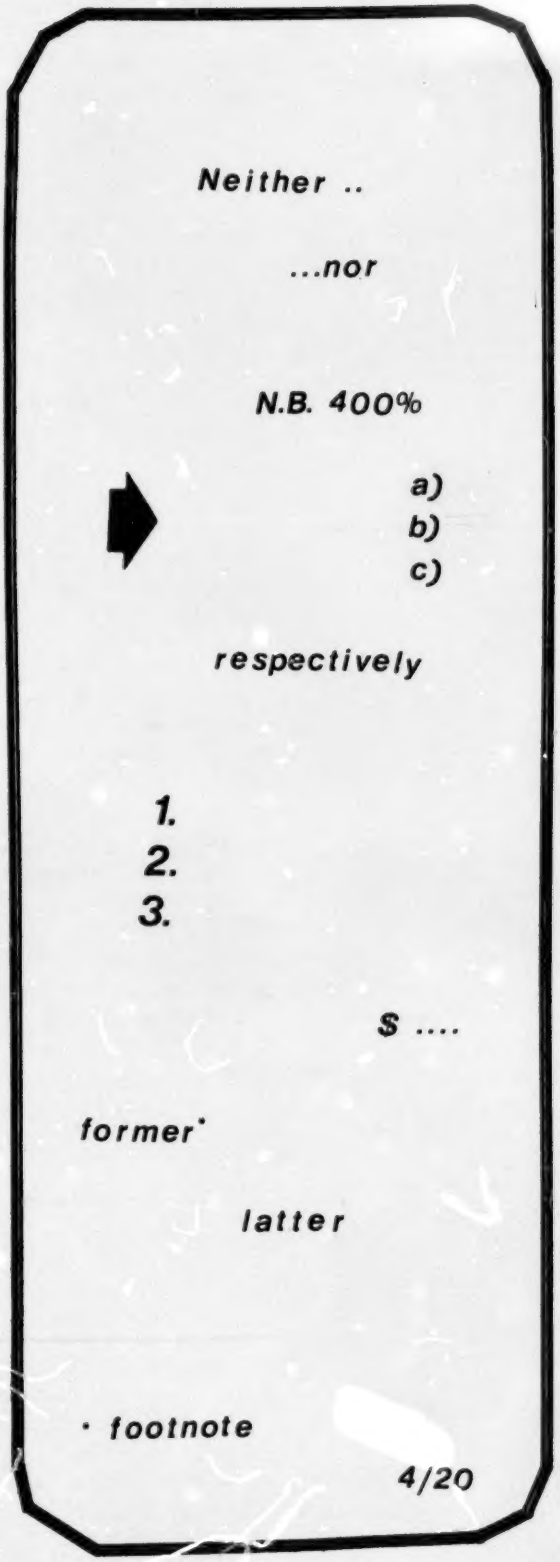
the next Dick Frances mystery have? What style of music will a new Johnny Cash album have? What type of TV program is Norman Lear noted for?) Point out that the ability to anticipate the writer's favorite techniques makes "reading" (visual or auditory) easier and more effective. And conversely, that taking time to identify a couple of a writer's specialities means a second meeting with him or her will be less foreign.

. Encourage a student to become a mini-expert in an unfamiliar but intriguing subject or process. Ask him to read several books or magazine articles on the subject, compile a list of terms and be able to define them, know the big "names" (key personalities) in the field. The topic should not be one well known to the student, but rather one in which his or her interest is strong enough to meet the challenge of a new jargon, process or subject.

Areas of mini-expertise might range from learning about dowsing for water to carving totem poles, from building a solar heating system for your home to retrieving sunken treasure, from investigating cryptograms to tracing the expeditions of arctic explorers, from starting an earthworm farm to repairing electrical appliances. (The topics may seem somewhat exotic, but one of the benefits of reading is "doing" exotic things.)

The object here is not only to encourage regular reading by capturing the special interests or goals of a reader, but to focus attention on cycle of knowledge of jargon and terms improving reading comprehension, and reading improving a facility with vocabulary.

Students taking courses for diploma courses face a similar cycle in material they must read for history, science and English, and are often overwhelmed with the prospects. If, however, they have succeeded in one cycle (see above), new jargons and terms are less overwhelming.



Using Personal Experience for Clues

The background experience of every reader affects how a message is perceived almost as much as the way the message is written. An experienced reader realizes this and makes adjustments in his or her reading approach and expectations. Inexperienced or occasional readers often fail to recognize:

1. that this is the norm for interpersonal communication (writer-to-reader) and
2. that there are techniques by which he can make appropriate adjustments.

Rather than pointing up areas in which inexperienced readers are unsuccessful or inefficient in making adjustments to printed messages, concentrate on areas in which he or she subconsciously matches experience and/or background to reading matter.

- Post examples of do-it-yourself instructions (carpentry, sewing, gardening, plumbing, auto mechanics, photography) and recipes. Have students identify terms (tools, meterial, processes) that are familiar - a necessary ingredient in effective comprehension of the instructions.

  Encourage students to tell how they learned the terms and what they did when faced with unfamiliar processes, tools or ingredients. Have those students who are specialists in a specific activity, thus the most competent readers, explain or demonstrate definitions unknown to their classmates. (See Specialized Jargon, page 12, for some specific examples of vocabulary necessary for successful reading in these areas.)

- Have students collect examples of headlines that give literal information requiring no special experience with terms, names abbreviations, jargon, references. For example:

  Million Dollar House Destroyed By Fire

  Then have students collect examples of headlines that convey meaning only to those people who understand the specialized language. For example:

  Black Tulip Wins at Aqueduct
  Reds Edge Cubs in the Nineth
  HHH Out of the Running

- Ask students to classify headlines under specific topics (e.g. national politics, state politics, personalities in the news, baseball news. tennis news, economic news) and explain what the headlines mean. Emphasize the talent it takes to comprehend a headline.

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Page 3, from the Center for Vocational Education, Metrics for Good Measure (HEW funded), Ohio State University, Columbia, Ohio;
Page 4, adapted from the National Foundation-March of Dimes phamphlets on Tay-Sach Disease, Sickle Cell Anemia, Cooley's Anemia;
Page 6, adapted from cover art, Building A Map Skills Program (B. S. Atwood), A LEARNING Handbook, Education Today Company, Inc., Palo Alto, Ca.

Readability of Teacher-Made Materials

The same adult educators who are alert to adult needs for practical skills, flexible study systems and pay attention to physical limitations, are far less conscious about the readability of homemade materials.

Problems and Solutions

color

Black, green or red are the easiest colors to read. The most difficult to read are purple and blue-purples. What color duplicating ink is used most often in your class?

line length

It is standard practice to make one column of text, over seven inches in width. That's a far cry from the recommended column width of three to three and one half inches.

type size

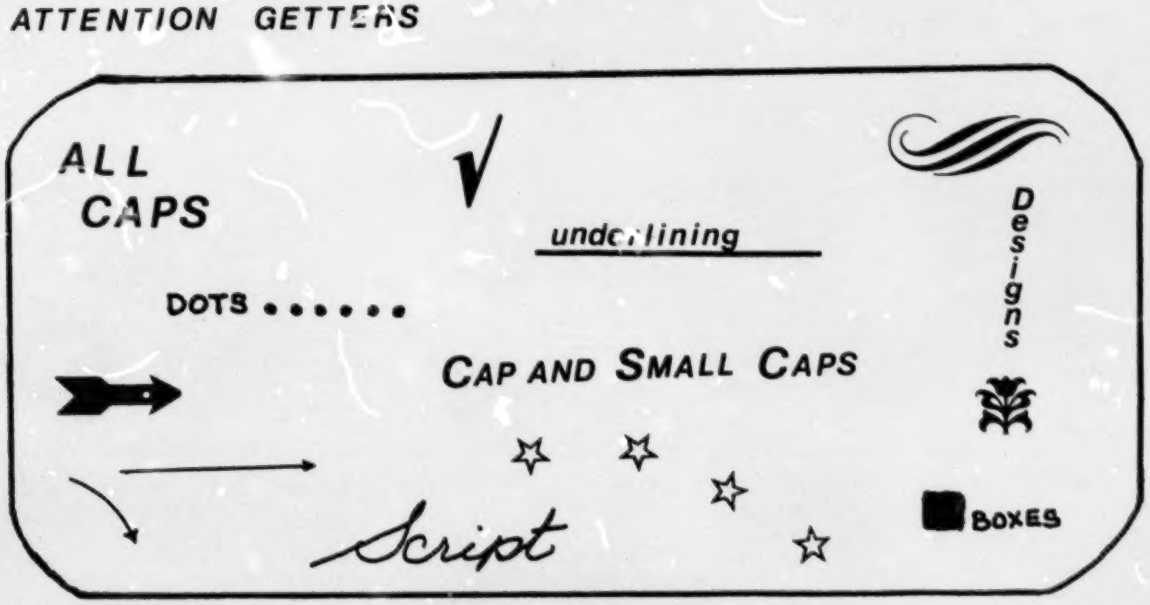
Typewriter type is about the size type used by newspapers. But newspaper type is generally well-inked and thus easier to read than that run off on a duplicator. A larger type face, for example elite, would make reading easier on adult eyes.

attention getters

Many of the gimmicks used by typographic and graphic design are ignored on teacher-made materials. Yet, if the object is to make success possible, one way to keep readers reading is to make copy eye-catching and helpful. (A note of caution: too many attention getters cause chaos--not order.)

illustrations

Diagrams, maps, graphs, tables, cartoons, can be used to lighten the look of a duplicated page and are useful devices to provide additional data. For readers who are visual learners. a picture is, indeed, worth a thousand words.



Specialized Jargon In Everyday Reading

From the Kitchen

separate
fold in
whip
scald
knead
set
dredge
braise
baste
simmer
yield
thicken
meal
cream
yolk
shortening

From the Sewing/Knitting Basket

knit/purl
cast on/off
increase/decrease
block
yard goods
bind off
binding
selvage
baste
hem
smock
yoke
inset
pleat
gather
braid

From the Workshop

mortise
miter
level
dovetail
jigsaw
thread
sand
finish
2x4
tongue and grove
grain
stain
bevel
inset
molding
nut
washer
brad
bond
solder

From the Menu

a la carte
a la mode
cocktail -
(shrimp, fruit, drinks)
rare/medium
casserole
main course
entree
kabob
pot pie
au gratin
toast points
French toast
sunnyside up
over easy
chowder
boullion
soup du jour
bisque
house dressing
pasta
hamburger
cheeseburger
cheese cake
sundae
parfait
cobbler
shake
cooler
float

From the Newspaper

detente
energy crisis
the economy
double-digit inflation
EPA mileage ratings
The White House
On the Hill
On Capitol Hill
The Cabinet
IRS
W-2
10-40
SST
sound barrier
Alaskan pipeline
feminist movement
ERA
NOW
UN
UNESCO
UNICEF
HEW
HUD
CETA
WIN
CIA
FBI
CPR
IV
RH-factor
A.P.
U.P.I.

From the Playing Field

single
double
triple
blank
field
park
stands
ump
ref
sticks
mitt
gloves
guard
dugout
green
tee
birdie
eagle
boogey
hole-in-one
par
strike
ball
spare
yardage
downs
hat trick
grand slam

Organizational Clues

If a reader can quickly identify the organization of a text, reading is easier. Good readers do this subconsciously. Less confident readers may need to have the significance of organizational clues pointed out.

Provide opportunities for students to classify texts by organizational approach and/or skim texts (newspaper columns, pamphlets, etc.) to determine appropriate organizational labels.

Organizational Approaches for Texts

time	*alphabetical*
TV programs bus, plane, train schedules schedules of exhibits and performances timelines sports standings (races, rodeo events)	phone listings dictionary atlas encyclopedia index
rank	***sequence***
sports standings tables graphs ingredients list on food labels age/weight/height groups EPA ranking for mileage	recipes step-by-step directions cartoons stories outlines table of contents graphs history
topics	***spatial/geographic***
want ads entertainment ads cartoon strips library outlines encyclopedias catalogues	floor plans, landscape sketches news (town/state/national/international) telephone (area codes) maps reality ads vacation ads mail (addresses, zip codes)

A Readability Formula In Use

A person must meet certain requirements or conditions to get a Connecticut operator's license. These conditions are:

1. A person must be at least 16 years and 30 days old.
2. A person must be in good physical health and good mental health. A person must be healthy enough to drive a motor vehicle safely.
3. A person must be able to pass all the driver's license tests. (You will learn more about these tests in another part of this book.)

A person who wants to take the driver's examination must provide a motor vehicle for one of the tests. That is, a person must bring a vehicle in which to take the Driving Test. This vehicle must be in good mechanical condition. If the vehicle you bring is not in good running order, you will not be allowed to take the Driving Test.

Sometimes a person may have to complete special forms to get a license. You will have to complete a special form if you have had any of the following problems:

1. nervous illness
2. mental illness
3. diabetes
4. fainting spells
5. dizziness
6. heart trouble
7. conviction or having been found guilty of a drug offense.

If you have had any of these problems, you must present a certificate. The certificate must be completed on a special form. It must be on a departmental form called P-40 (certificate of physical or mental condition--or epilepsy). Your doctor will say whether you're in good health both physically and mentally. The doctor will also have to say whether you have any physical handicap that would keep you from safely driving a motor vehicle. The law says this information will be kept private. This information will only be used to help you get your license.

proper noun

two syllable

A
100 words
7.2 sentences
143 syllables
Fry (middle) 7th grade

proper noun

B
100 words
6.9 sentence
140 syllables
Fry (lower) 7th grade

C
100 words
7.8 sentences
155 syllables
Fry (upper) 8th grade

Fry Formula

1. Select three 100-word passages from near the beginning, middle, and end of the book. Skip all proper nouns (e.g. Connecticut).

2. Count the number of sentences in each hundred word passage (estimating to the nearest tenth of a sentence). Average these three numbers to get average sentence length.

3. Count the number of syllables in each 100-word sample. (Be careful; walked is 1 syllable, potted is 2 syllables.)

   It may be easier to count every syllable over one in each word and add 100 for the one-syllable words. (See example page 14.) Find the average number of syllables for the three samples.

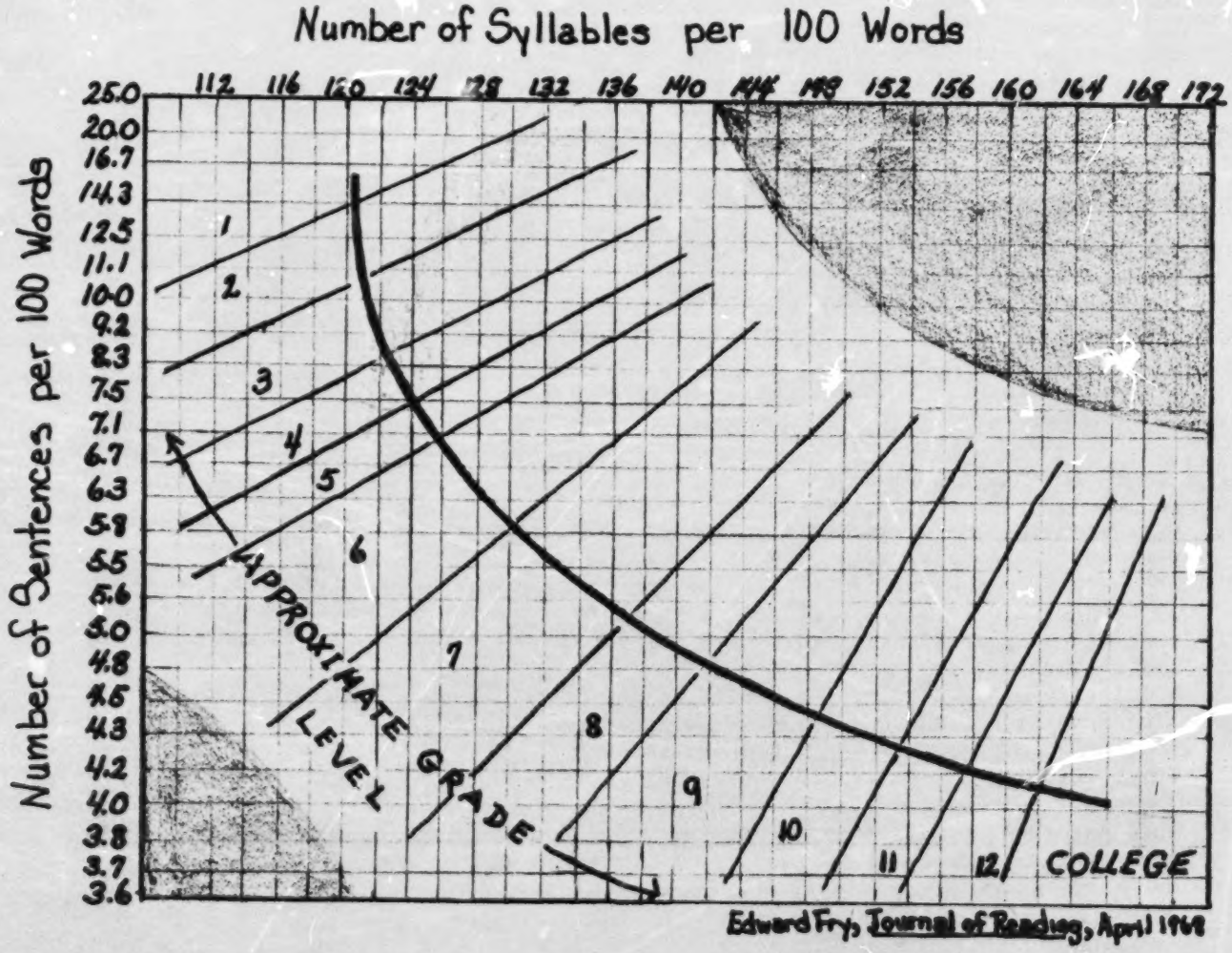
4. On the graph, plot the point at which the average number of sentences and average number of syllables intersect. (Most points will fall near the heavy curved line.)

   Scores plotted in the grayed area are not valid grade level scores (according to Fry's system).

Plotted sample based on analysis of 3 100-word samples (page 14):

	Syllables	Sentences
A	143	7.2
B	140	6.9
C	155	7.8
average	146	average 7.3

Approximate grade level as plotted —— 7th grade.



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